

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. – 85. (Canceled)

86. (Currently amended) A sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell expresses:

(i) a sulfatase, wherein the sulfatase is ~~an activated form of~~ an endogenous sulfatase, wherein the endogenous sulfatase is activated by insertion of a strong promoter, or an exogenous sulfatase, and wherein expression of the sulfatase is increased as compared to expression in the same cell type without the activated form of the sulfatase; and

(ii) a Formylglycine Generating Enzyme, wherein the Formylglycine Generating Enzyme is ~~an activated form of~~ an endogenous Formylglycine Generating Enzyme of amino acids 34-374 of SEQ ID NO:2, or SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, wherein the endogenous Formylglycine Generating Enzyme is activated by insertion of a strong promoter, or an ortholog thereof or an exogenous Formylglycine Generating Enzyme of amino acids 34-374 of SEQ ID NO:2, or SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78, or an ortholog thereof, and wherein expression of the Formylglycine Generating Enzyme is increased as compared to expression in the same cell type without the activated form of the Formylglycine Generating Enzyme,

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme.

87. (Previously presented) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme.

88. (Previously presented) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme.

89. (Previously presented) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme.

90. (Previously presented) The sulfatase-producing cell of claim 86, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the Formylglycine Generating Enzyme.

91. (Withdrawn) A sulfatase produced by a sulfatase-producing cell of any one of claims 86-90.

92. (Previously presented) The sulfatase-producing cell of claim 86, wherein the cell is a prokaryotic cell.

93. (Previously presented) The sulfatase-producing cell of claim 86, wherein the cell is a eukaryotic cell.

94. (Previously presented) The sulfatase-producing cell of claim 93, wherein the eukaryotic cell is a mammalian cell.

95. (Previously presented) The sulfatase-producing cell of claim 93, wherein the eukaryotic cell is a human cell.

96. (Previously presented) The sulfatase-producing cell of claim 86, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylglucosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

97. – 100. (Canceled)

101. (Currently amended) A sulfatase-producing cell wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased, wherein the cell expresses:

(i) a sulfatase, wherein the sulfatase is ~~an activated form of~~ an endogenous sulfatase, wherein the endogenous sulfatase is activated by insertion of a strong promoter, or an exogenous sulfatase, and wherein expression of the sulfatase is increased as compared to expression in the same cell type without the activated form of the sulfatase; and

(ii) ~~an activated form of~~ an endogenous Formylglycine Generating Enzyme, wherein the endogenous Formylglycine Generating Enzyme is activated by insertion of a strong promoter, or an exogenous Formylglycine Generating Enzyme, the Formylglycine Generating Enzyme having:

[[a)] an amino acid sequence that comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2, or is at least 95% identical to SEQ ID NO:2, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, or 78; or

—— (b) an amino acid sequence that is encoded by a nucleic acid that hybridizes under stringent conditions (6X SSC at 65°C) to the complement of a nucleic acid encoding SEQ ID NO:2;

wherein expression of the Formylglycine Generating Enzyme is increased as compared to expression in the same cell type without an activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme;

wherein the Formylglycine Generating Enzyme is capable of forming L-C α -formylglycine on a sulfatase; and

wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 5% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme.

102. (Previously presented) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 10% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme.

103. (Previously presented) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 20% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme.

104. (Previously presented) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 50% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme.

105. (Previously presented) The sulfatase-producing cell of claim 101, wherein the ratio of active sulfatase to total sulfatase produced by the cell is increased by at least 100% as compared to the ratio in the same cell type without the activated form of the endogenous Formylglycine Generating Enzyme or the exogenous Formylglycine Generating Enzyme.

106. (Withdrawn) A sulfatase produced by a sulfatase-producing cell of claim 101.

107. (Previously presented) The sulfatase-producing cell of claim 101, wherein the cell is a prokaryotic cell.

108. (Previously presented) The sulfatase-producing cell of claim 101, wherein the cell is a eukaryotic cell.

109. (Previously presented) The sulfatase-producing cell of claim 108, wherein the eukaryotic cell is a mammalian cell.

110. (Previously presented) The sulfatase-producing cell of claim 108, wherein the eukaryotic cell is a human cell.

111. (Previously presented) The sulfatase-producing cell of claim 101, wherein the sulfatase is selected from the group consisting of Iduronate 2-Sulfatase, Sulfamidase, N-Acetylgalactosamine 6-Sulfatase, N-Acetylglucosamine 6-Sulfatase, Arylsulfatase A, Arylsulfatase B, Arylsulfatase C, Arylsulfatase D, Arylsulfatase E, Arylsulfatase F, Arylsulfatase G, HSulf-1, HSulf-2, HSulf-3, HSulf-4, HSulf-5, and HSulf-6.

112. (Withdrawn) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises a GFR motif.

113. (Previously presented) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises an RVXXGG(A)S (SEQ ID NO:79) motif.

114. (Withdrawn) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises a heptamer that comprises three arginine residues.

115. (Withdrawn) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme comprises a subdomain 3, wherein the subdomain 3 comprises three cysteine residues.

116. (New) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme of SEQ ID NO:2, wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter.

117. (New) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme of SEQ ID NO:2.

118. (New) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme, wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

119. (New) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of SEQ ID NO:2.

120. (New) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme of amino acids 34-374 of SEQ ID NO:2, wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter.

121. (New) The sulfatase-producing cell of claim 86, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme of amino acids 34-374 of SEQ ID NO:2.

122. (New) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an endogenous Formylglycine Generating Enzyme, wherein the endogenous Formylglycine Generating Enzyme is activated by a strong promoter and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.

123. (New) The sulfatase-producing cell of claim 101, wherein the Formylglycine Generating Enzyme is an exogenous Formylglycine Generating Enzyme and comprises an amino acid sequence that has at least 95% identity to the amino acid sequence of amino acids 34-374 of SEQ ID NO:2.